



Geospatial World Forum - Hydrography & Maritime

5 May 2023

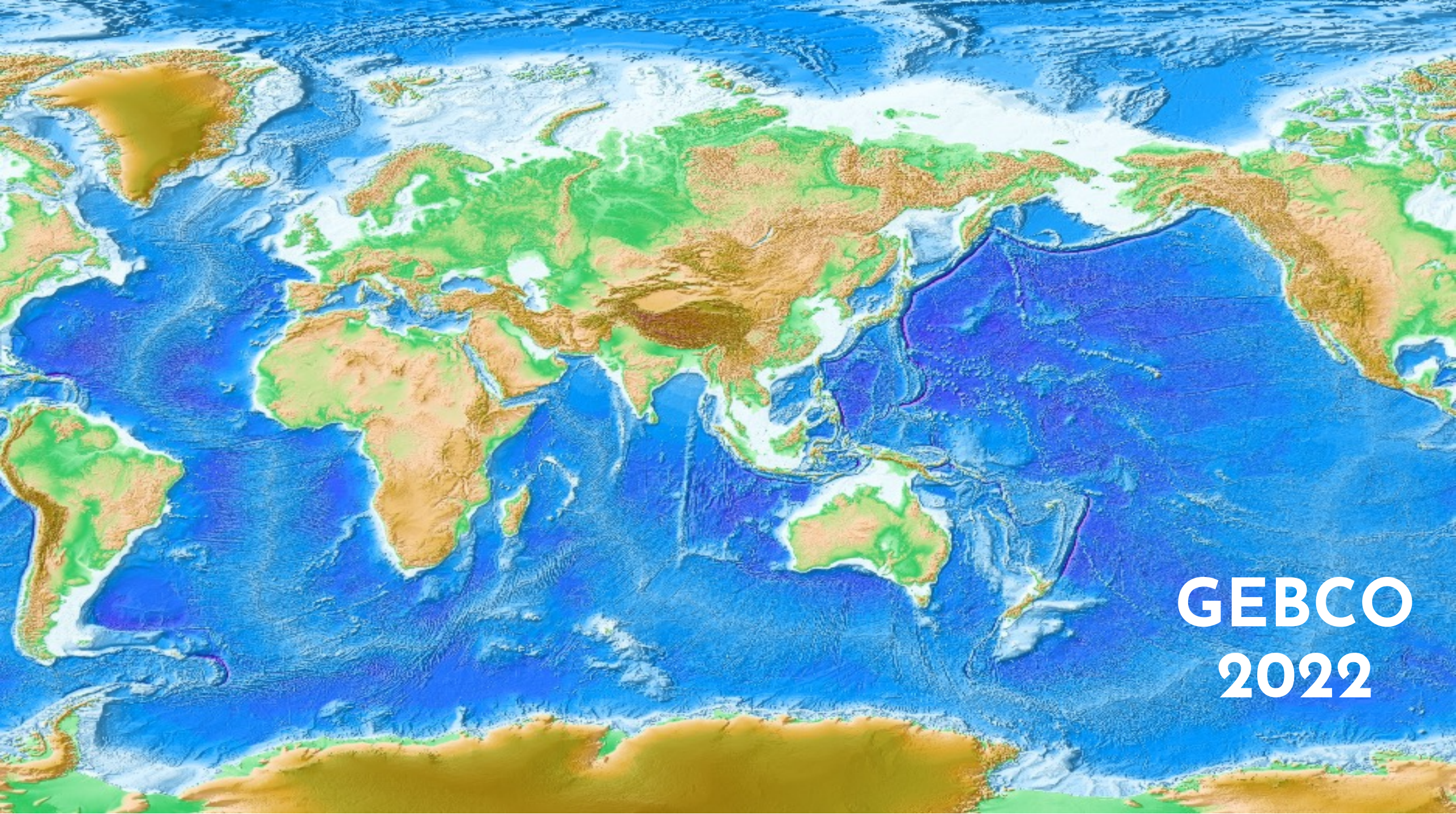
Building an Ocean Observation Organisation embracing the Hydrospatial Domain

Model and pilot project to showcase a new type of hydro(*graphic*)spatial institute as a solution for small islands states, the Seychelles case study.

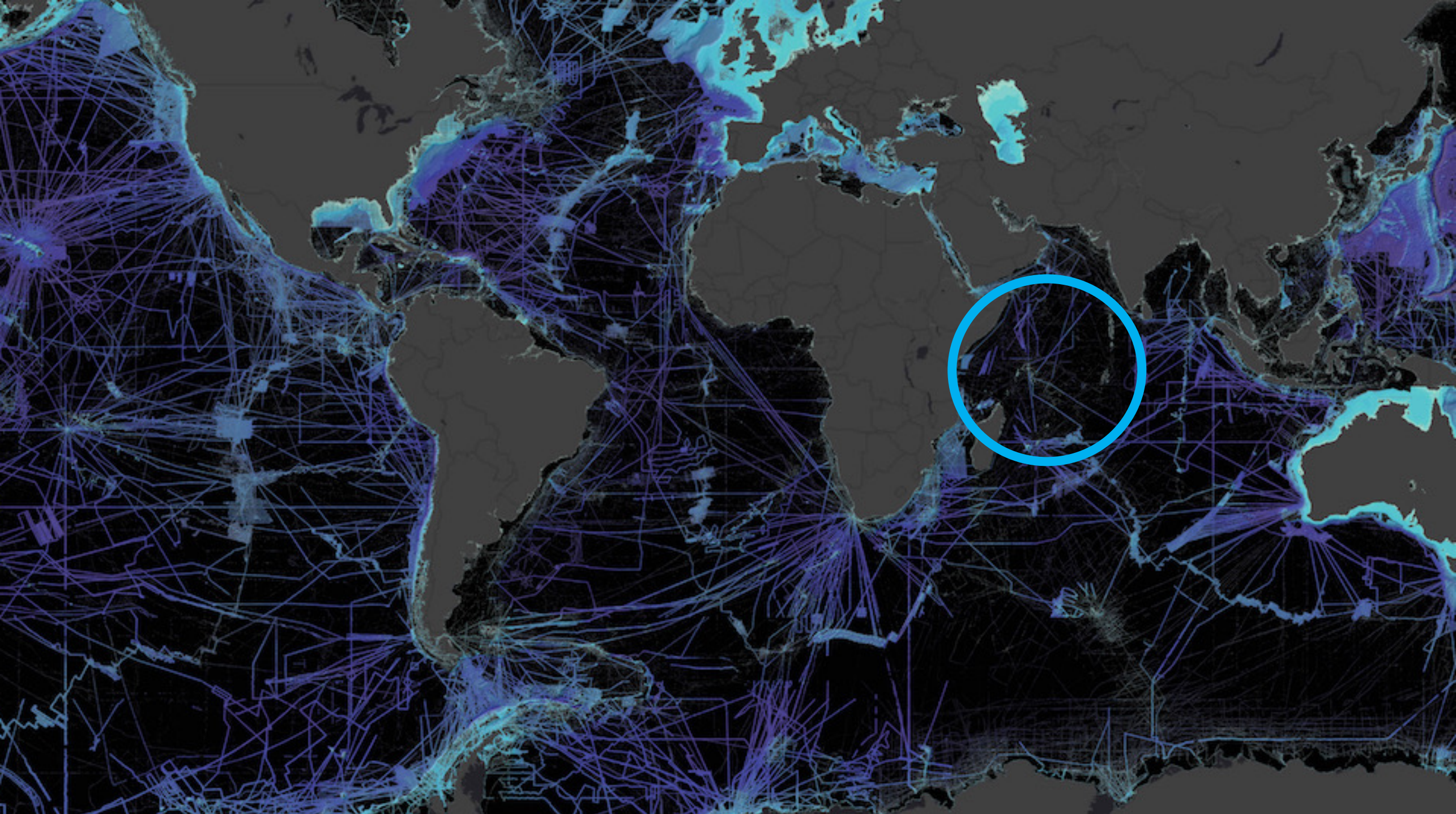
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GEBCO
2022





DEFINITIONS

Hydrospatial (*adjective*)

Relating to hydrospatial sciences or denoting data, information and knowledge that is associated with a particular “location and time” of the earth’s waters and their contiguous zones.

Hydrospatial sciences (*plural-only noun (plurale tantum)*)

All sciences dealing with the study of the earth’s waters and their contiguous zones.



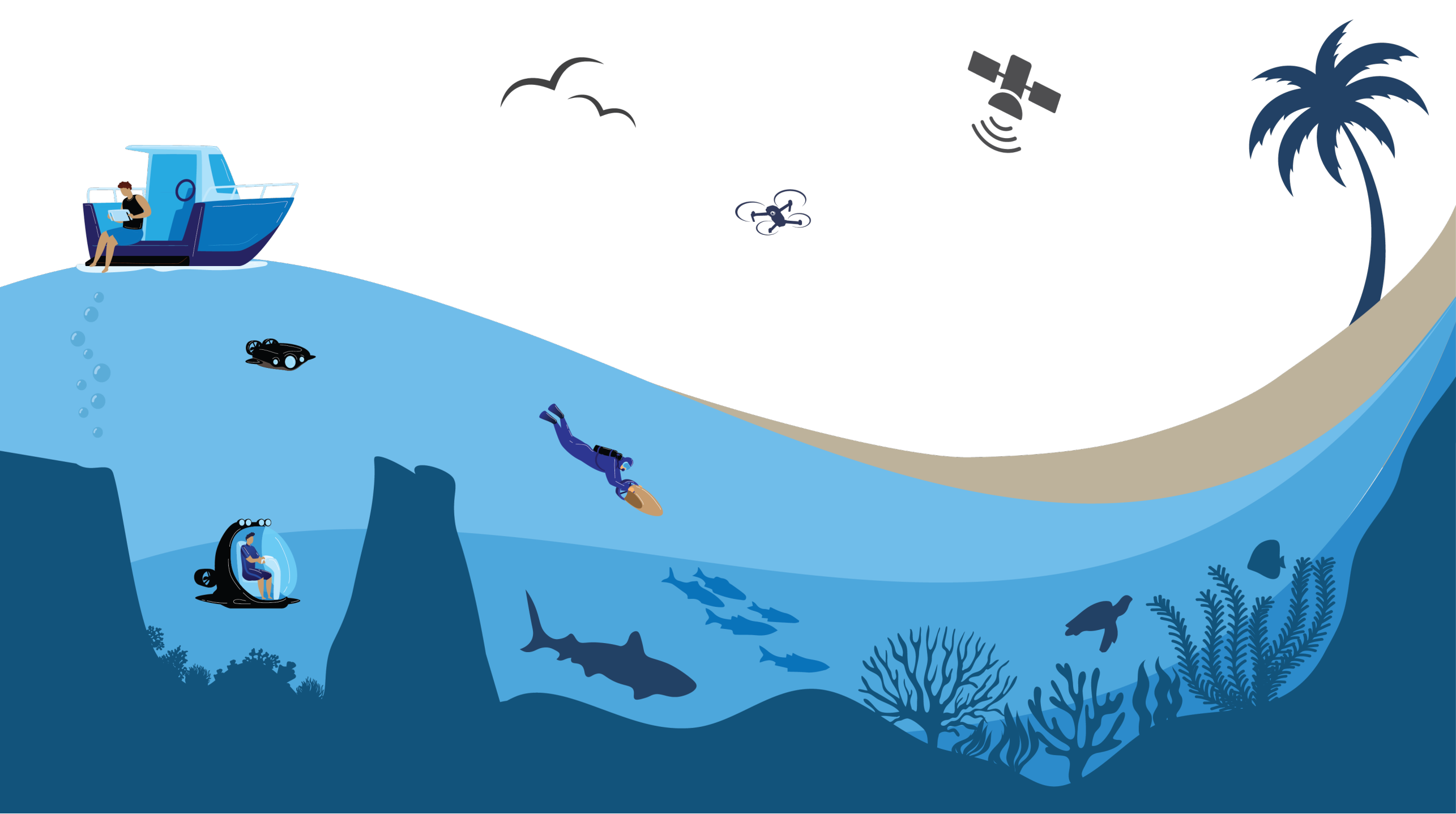
In simple words **Hydrospatial...**

*...is an adjective, it is "about all the **Blue** of our **Blue Planet...** & its contiguous zones (Coastal, Flooding areas, Water Column, Bottom, Sub Bottom, Surface & Atmosphere)" ...*

*...it's synonymous to the **Blue Geospatial*** contributing to the **Sustainable Blue Economy...***

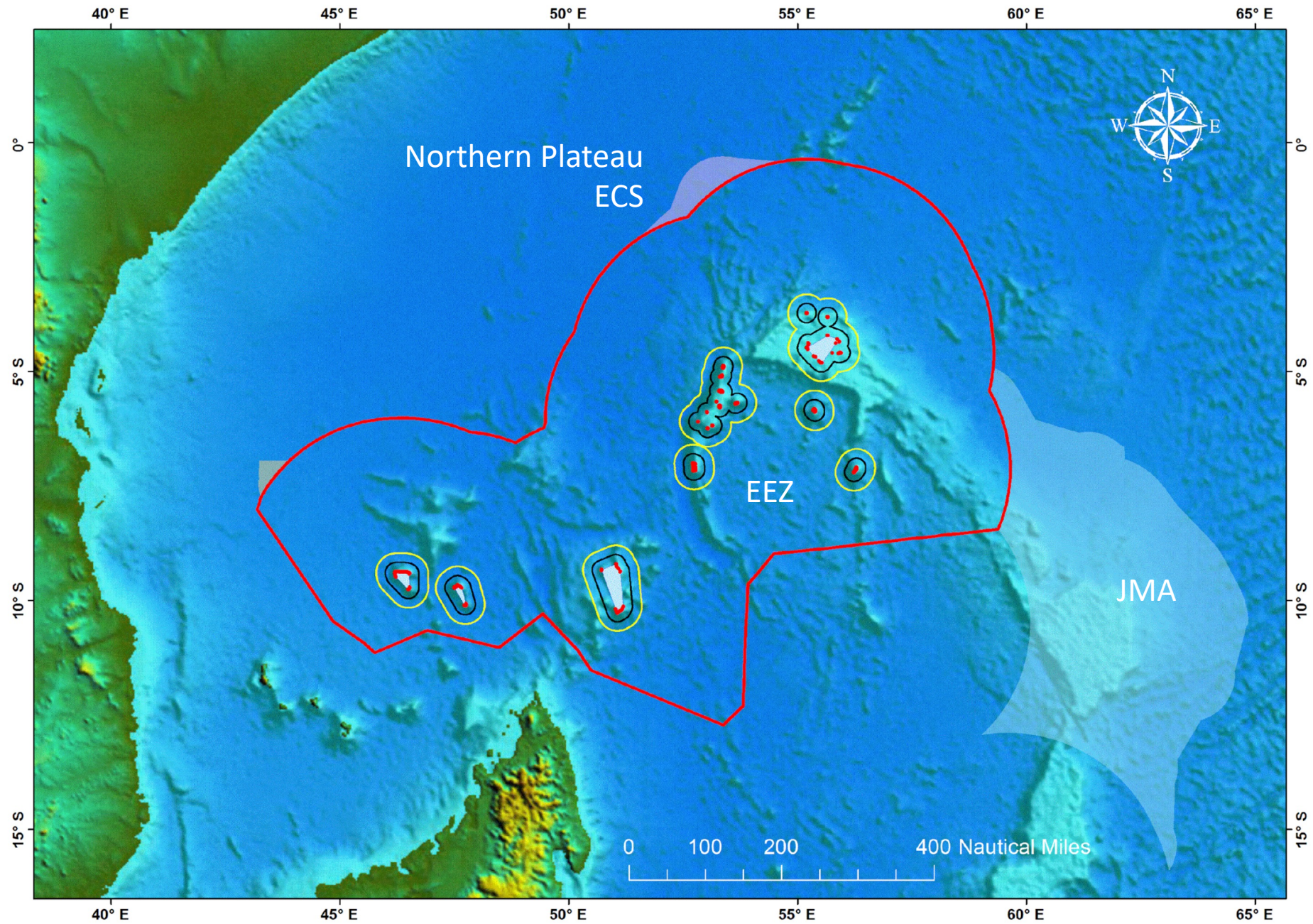
Visit the Story Map at: <https://arcg.is/19fiab>

Join the community at: www.linkedin.com/groups/12556091/



Why is hydrospatial science needed for Seychelles?

- Navigation and safety
- Maritime infrastructure development
- Marine Spatial Planning
- Marine conservation
- Blue Economy
- Climate change (sea-level rise)
- Marine pollution
- Coastal zone management
- Sustainable management of marine resources
- Ocean governance



INDIAN OCEAN SOUTHERN APPROACHES TO THE SEYCHELLES GROUP DEPTHS IN METRES

SCALE 1:750 000 at lat 4°30'

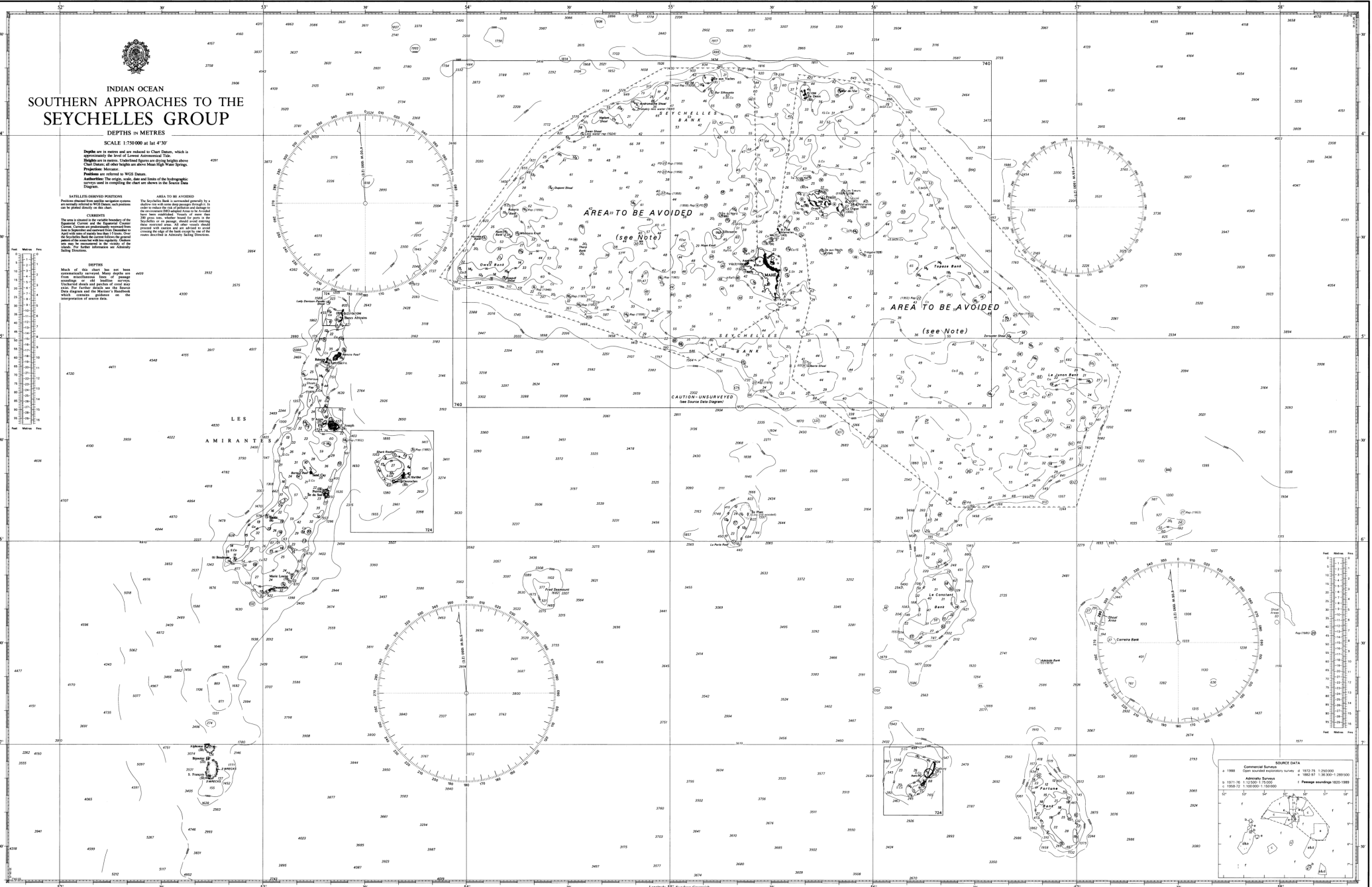
Depths are in metres and are reduced to Chart Datum, which is approximately the level of Lowest Astronomical Tide. Heights are in metres. Underlined figures are drying heights above Chart Datum. Other heights are above Mean High Water Springs. Underlined figures are heights above Mean Low Water Springs. Underlined figures are heights above Mean Low Water Neap Tides. Underlined figures are heights above Mean Low Water Neap Tides. Underlined figures are heights above Mean Low Water Neap Tides.

SATELLITE-OBSERVED POSITIONS
Positions derived from satellite observations are indicated by a small circle with an 'S' inside. Positions derived from other observations are indicated by a small circle with a dot inside.

AREA TO BE AVOIDED
The area to be avoided is indicated by a dashed line. It is a precautionary measure to avoid the area.

CAUTION-UNSURVEYED
See Source Data Diagram.

REMARKS
Mark of this chart has not been previously surveyed. The depth soundings are based on the soundings of the original chart. The depth soundings are based on the soundings of the original chart. The depth soundings are based on the soundings of the original chart.

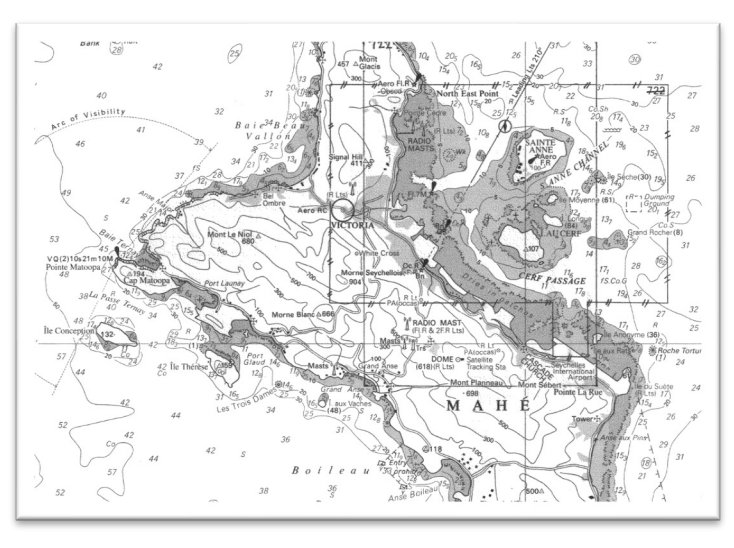
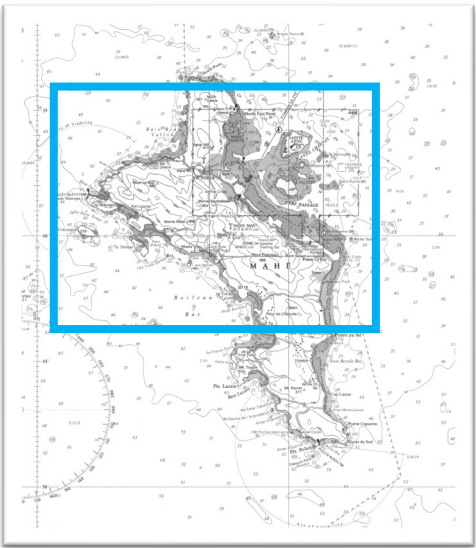
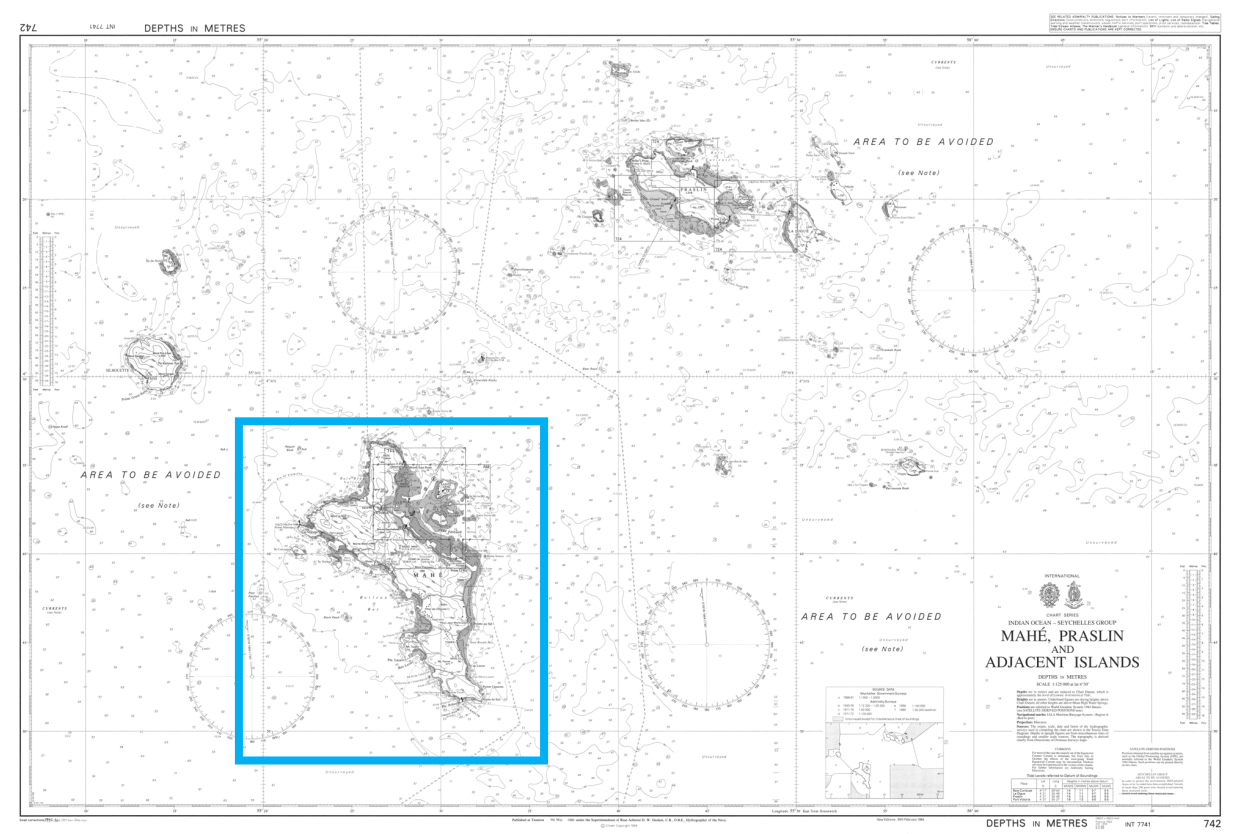
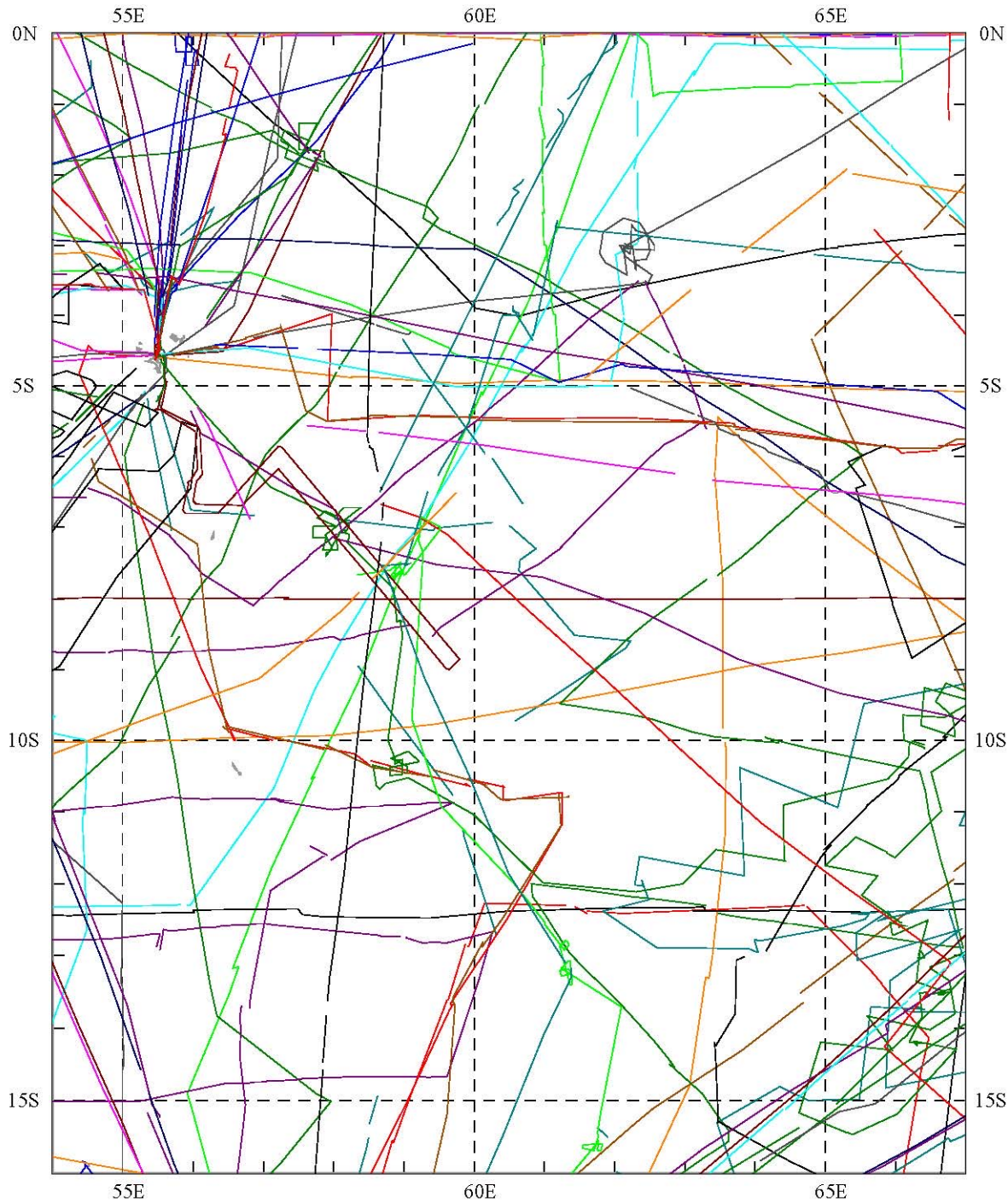


COMMERCIAL SOURCE DATA

1980	1982	1984	1986
1988	1990	1992	1994
1996	1998	2000	2002
2004	2006	2008	2010

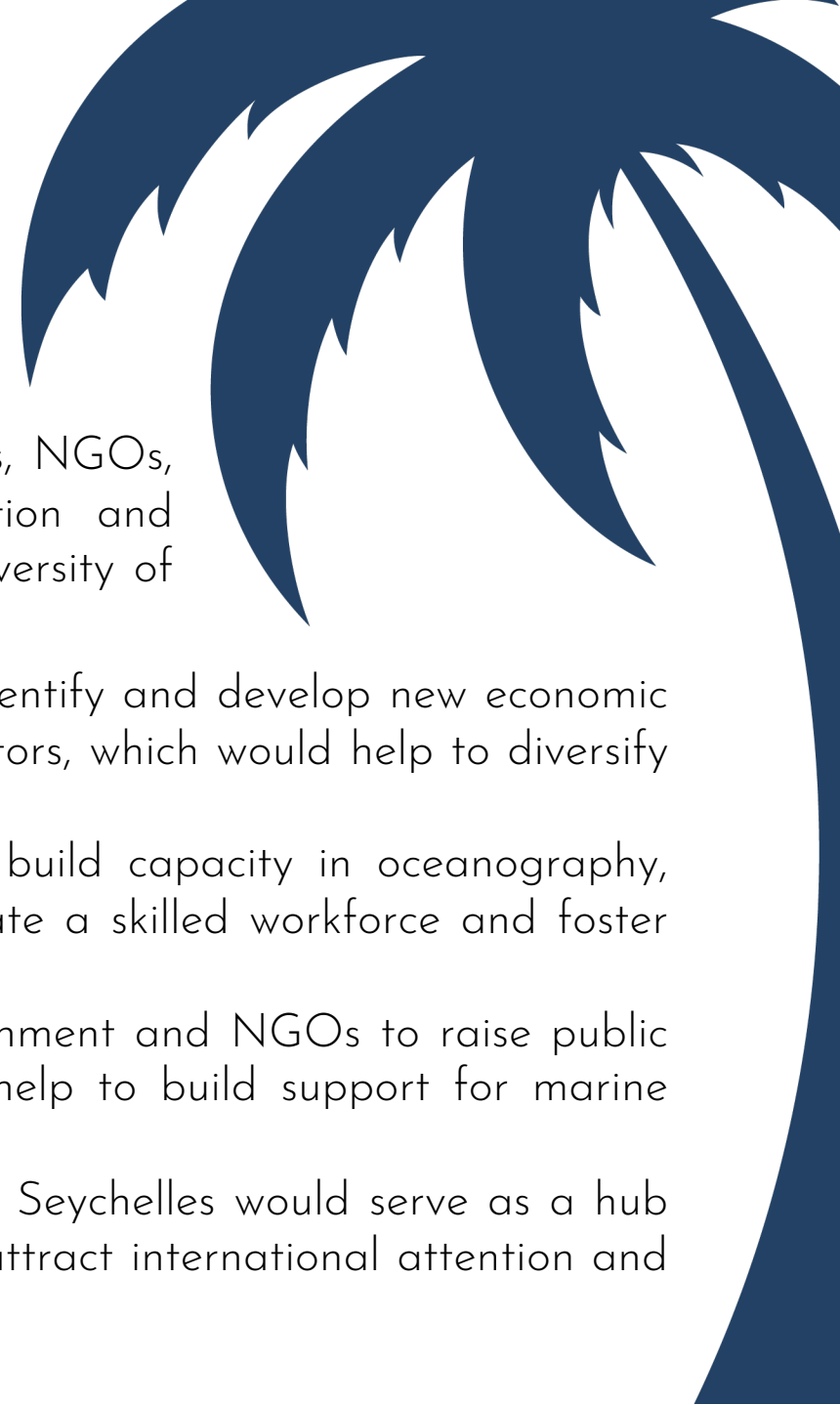
ADDITIONAL SOURCE DATA

1972	1974	1976
1978	1980	1982
1984	1986	1988
1990	1992	1994
1996	1998	2000
2002	2004	2006
2008	2010	2012
2014	2016	2018
2020	2022	2024
2026	2028	2030



BENEFITS OF A HYDROSPATIAL ORGANISATION FOR SEYCHELLES

- **Advancing knowledge in oceanography, hydrography, and hydrospatial sciences:** Conducting research and providing information and data that can help inform policy and management decisions related to ocean and coastal resources.
- **Improving marine conservation:** By working with government agencies, NGOs, and other partners, the institute could help to increase the protection and conservation of marine resources, which would help to maintain the biodiversity of the Seychelles waters.
- **Enhancing economic opportunities:** Work with the private sector to identify and develop new economic opportunities in the oceanographic, hydrographic, and spatial sciences sectors, which would help to diversify the country's economy and create new jobs.
- **Building capacity:** Work with universities and research institutions, to build capacity in oceanography, hydrography, and spatial sciences in Seychelles, which would help to create a skilled workforce and foster innovation.
- **Increasing public awareness and engagement:** Work with the government and NGOs to raise public awareness and engagement on ocean and coastal issues, which would help to build support for marine sustainable management.
- **Attracting international attention:** A marine spatial institute based in Seychelles would serve as a hub for marine research and collaboration in the region, which would help to attract international attention and funding to the country.





VISION

To become a leader in the field of “hydrospatial” sciences by advancing their importance and benefits towards the development of the Seychelles' blue economy.

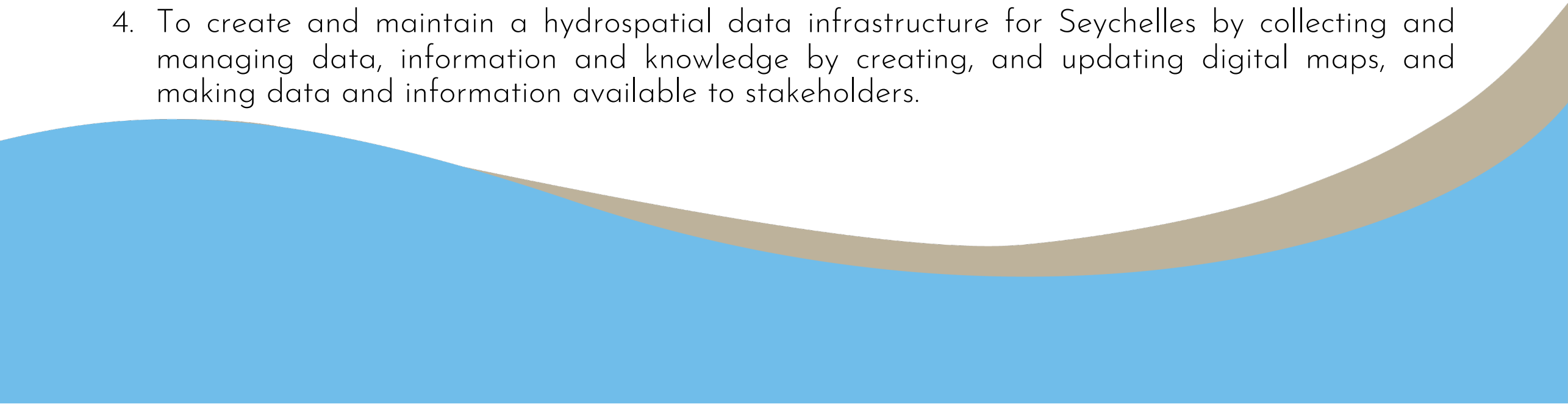
MISSION STATEMENT

To develop and advance the understanding of hydrospatial sciences in Seychelles through promotion and innovations, research and development + technology in areas such as: oceanography, hydrography and much more for the public benefit and progress of knowledge.

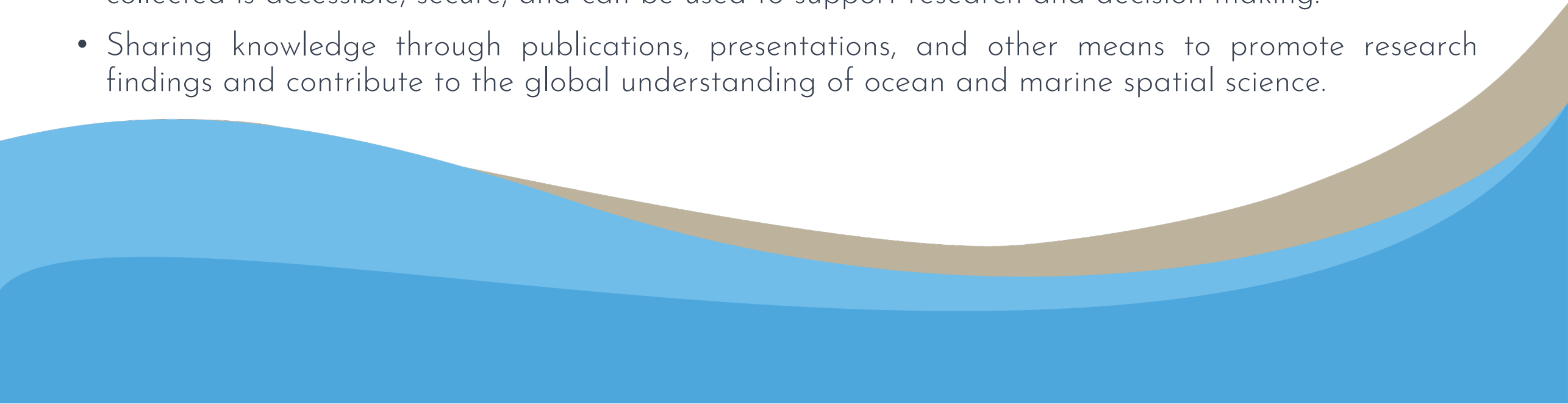
GOALS

- **Deliver expertise** in hydrospatial scientific disciplines such as hydrography, oceanography and ocean mapping.
- **Educate & advocate** the hydrospatial knowledge of oceanography, hydrography and marine spatial sciences.
- **Promote & communicate** on the importance & benefits of hydrospatial sciences for the development of the blue economy.
- **Provide** a forum for building and sharing of knowledge for all stakeholders on all matters related to hydrospatial sciences.
- **Enable** capacities and capabilities, promoting scientific pursuits towards the advancement of knowledge of the ocean and the blue economy.
- **Encourage** the employment of expertise in the hydrospatial sciences for the benefit of all.

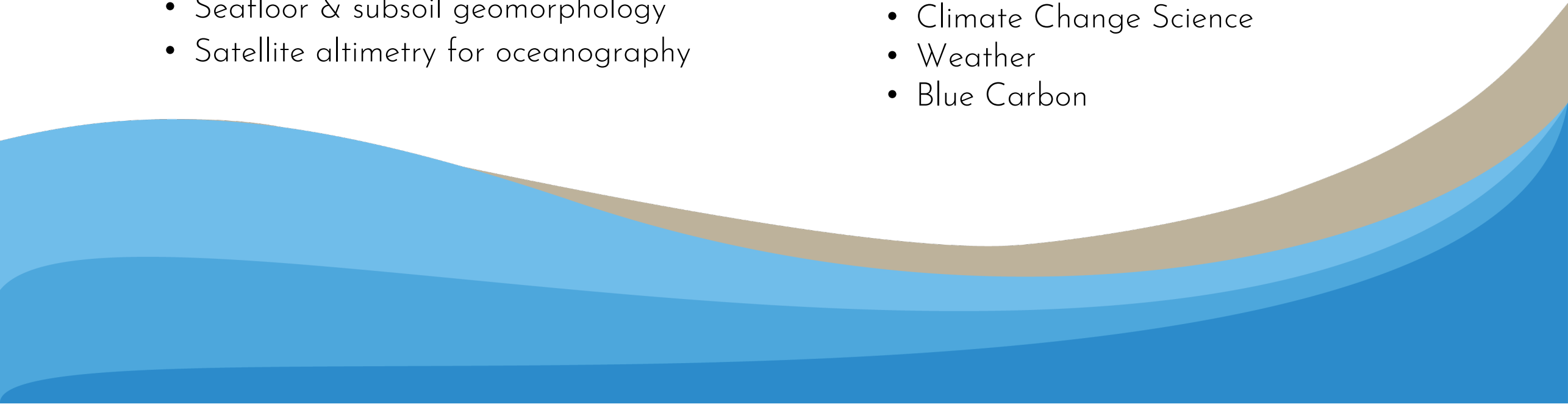
OBJECTIVES

1. To develop and implement a hydrospatial science plan and policy for Seychelles by researching best practices.
 2. To support the creation of accurate and up-to-date hydrospatial maps including hydrographic charts of Seychelles waters by collecting and analysing bathymetric data, updating hydrospatial information, and ensuring compliance with international standards.
 3. To support the safe and efficient navigation of ships in Seychelles waters by providing hydrospatial and hydrographic services, such as survey, charting and resources mapping support.
 4. To create and maintain a hydrospatial data infrastructure for Seychelles by collecting and managing data, information and knowledge by creating, and updating digital maps, and making data and information available to stakeholders.
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Strategies to achieve goals and objectives

- Collaborating with other organizations, institutes, and universities which can help access additional resources, knowledge, and expertise.
 - Utilising technology such as remote sensing, modeling, and simulation can help gather and analyse data more efficiently.
 - Securing funding from various sources, including grants, philanthropy, and impact investing can help achieve the goals and objectives.
 - Establishing an effective data management processes and systems to help ensure that the data collected is accessible, secure, and can be used to support research and decision-making.
 - Sharing knowledge through publications, presentations, and other means to promote research findings and contribute to the global understanding of ocean and marine spatial science.
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DEPARTMENTS

- **Social Marine Science**
 - Pollution
 - Blue Economy
 - Harmful Algal Blooms
 - Offshore Renewable Energy
 - **Oceanography**
 - Biological, Chemical, and Physical
 - Seafloor & subsoil geomorphology
 - Satellite altimetry for oceanography
 - **Marine Spatial Science = Hydrospatial**
 - Seafloor mapping and Bathymetry
 - Remote Sensing
 - Marine Data Portal
 - **Climate & Atmospheric Science**
 - Carbon Dioxide Removal
 - Tracking Coastal Carbon
 - Ocean-Air Interactions
 - Climate Change Science
 - Weather
 - Blue Carbon
- 

7-year plan for establishment

- 2 year to find adequate funding - establish the NGO and all its governance structure - **Board of Directors**
- Next 5 years focus on data acquisition, building the infrastructure and capacity
 - Data framework for storage and management
 - Research activities
 - Policy and scientific framework
 - Legal policies (including data storage and sharing)
 - Communication plan and outreach activities
 - Acquire Funding
- **3 key personnel required in very early stage** - Executive Director, GIS Officer and Data Analyst

POTENTIAL KEY PARTNERS

- Seychelles Government (various Ministries and Departments)
- University of Seychelles
- Seychelles Conservation and Climate Adaptation Trust (SeyCCAT)
- BERI - Blue Economy Research Institute
- United Nations Decade of Oceans Science for Sustainable Development 2030
- Nippon Foundation-GEBCO Seabed 2030
- Map the Gaps
- GEBCO
- International Hydrographic Organisation
- United Kingdom Hydrographic Office
- Other Public, Private, Philanthropist Organisations including Non-Profits

Please suggest us more...



SEYCHELLES MARINE DATA PORTAL

Most Coffee cups aren't recycled --
Bring your own reusable cup next time you visit
You can make a huge difference !!

↳ choose to refuse prepacked fruits & veg
↳ choose lightweight reusable produce bags instead
#ChooseToRefuse

Scientific Mesh

from - Research Data
- International Orgs?

↳ Seasurface Temperature
hydrologic models
Satellite data sets

Marine protected areas

from Min Env (MSP)
International orgs?
NGO's

↳ Current & future areas

Benthic Habitats

from - Research Data
- Research Survey / Cruise
- NGO's data

↳ LIDAR extractions
Multibeam Soundings
Classification of habitats

FISHERIES

from SFA
NGOS
International ORGS?

↳ Zones, trawl patterns, habitats

SHIPTRACKS & CRUISES

from Ports Authority
Ships LOGS (RLOC)?
~~AIIS~~ ^{AIIS} ? is it freely available

↳ Time Series.....

BATHYMETRY

from - GEBCO (free or paid)
- Hydrographic Maps
- International ORGS
- Research Data

SURVEY TRANSECTS

from - Research Data, Mesh
- Observations

↳ Geomorphic data,
Sediment transportation
Subsurface profiles
Hydrodynamic data

SHORELINES

from MHLIT
Min Env ?

↳ all topographic features

https://www.linkedin.com/posts/tcarta-marine_satellitederivedbathymetry-sentinel-icesat-activity-6976660234945646592-yS2I?utm_source=share&utm_medium=member_desktop

#SatelliteDerivedBathymetry in Aldabra, one of the outer islands in the Seychelles and the world's second-largest coral atoll, produced from a composite of more than 200 **#Sentinel-2** images and **#ICESat-2** bathymetry. **#Hydrospatial** www.tcarta.com





SHORE

The letter 'O' in the word 'SHORE' is replaced by a circular graphic. The top half of the circle shows a white sky with a satellite and a drone. The bottom half shows a blue ocean with a boat, divers, and coral reefs. A palm tree is on the right side of the circle.

Seychelles Hydrospatial Observatory
Research and Exploration Institute